



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,879	03/08/2004	George Carver	61404-1100	2091
24504 7590 08/27/2007 THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			EXAMINER DUDNIKOV, VADIM	
			ART UNIT 3663	PAPER NUMBER
			MAIL DATE 08/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/795,879

Applicant(s)

CARVER ET AL.

Examiner

Vadim Dudnikov

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-10,13-34,48-51 and 53-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-10,13-34,48-51 and 53-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 1, 2007 has been entered.

Response to Arguments

1. Applicant's arguments filed 06/01/2007 (see pages 14-21) have been fully considered but they are not in every respect persuasive. Claims 1, 8, 18, 28, and 48 have been amended, and claims 2 and 12 have been canceled in an effort to overcome objections and rejections set forth in the previous Office Action. Those objections or rejections that have been overcome by amendment are omitted from the present Office Action and are considered withdrawn.

Arguments presented by Applicants:

Regarding Applicant's argument on page 16 related to "Bosshard teaching away": Bosshard discloses modification of connection between neutron absorber tube different from disclosed by Applicants. However, design with tubes connection "by a pin which is inserted through the lugs welded to the edges of the square tubs" disclosed in

Art Unit: 3663

admitted art Bosshard specification (column 1, lines 7+) supports obviousness of Applicant's disclose.

These Applicants arguments are not persuasive because said connection is no more than a description of the commonplace hinge, routinely used in many devices. Rejection of amended claims is established in light of further consideration and search of the prior art presented below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-10, 13-34, 48-51 and 53-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what relationship is defined by having the various sidewalls of tubes in the container by "substantially aligned" (claims 1, 8, 18 and 48). With regard to claim 28, the statement, "each of the tubes having a plurality of recesses along at least one of the corner and a plurality of flat load bearing surfaces along at least one corner" is ambiguous because it is not clear whether a single corner is intended to have both recesses *and* flat surfaces. It is not clear from the claims how the weld recited in claim 56 is positioned so as not to be subject to the horizontal bearing load because the weld is presumably coupling

Art Unit: 3663

components that are subject to this load, and because the direction of the horizontal bearing load (claim 48) is also indefinite. Regarding claim 7: as can be seen in FIG. 5, connection of rod 8, 12 with rod 20, 22 by pin could not connect flat bearing surfaces of corners 60 and 62 together as claimed in claim 7 and as shown in FIG. 9.

3. Claims 3, 4, 5, 13 and 53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite because depended on canceled claims. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

Art Unit: 3663

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **1, 6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Loftis et al., (U.S. Patent No. 6,009,136) in view of "wooden house".

Regarding claim **1**, Loftis et al. disclose a container for storing or transporting spent nuclear fuel (title, abstract, column 1, lines 17+, column 2, lines 38+), the container comprising: a plurality of tubes that receive spent nuclear fuel assemblies, each tube having four sidewalls and four corners defining a rectangular cross section (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+); an attachment means for attaching respective pairs of a plurality of corners of the tubes to each other, at least one corner of a first one of the tubes engaging another corner of a second one of the tubes (rod segments 5 in FIG. 1, 2, column 3, lines 47+, column 4, lines 1+), the attachment means comprising a plurality of rods that are engaged ones of the corners (rod segments 5 in FIG. 1, 2, column 3, lines 47+, column 4, lines 1+), wherein each of the rods is a cylinder having a single cylindrical wall (rod segments 5 in FIG. 1, 2, column 3, lines 47+, column 4, lines 1+); each engaged corner of the first and second ones of the tubes being formed from an intersection of a first sidewall and a second sidewall, the first and second side walls being normal to each other (FIG. 1, column 3, lines 47+, column 4, lines 1+); the first sidewall of the first one of the tubes and the first sidewall of the second one of the tubes being in substantial alignment; and the second

Art Unit: 3663

sidewall of the first one of the tubes and the second sidewall of the second one of the tubes being in substantial alignment (FIG. 1, column 3, lines 47+, column 4, lines 1+).

Loftis does not necessarily teaches directly the limitations: "a plurality of recesses in respective ones of the corners" and "the cylindrical wall of each of the rods contacting at least two recesses associated with at least two of the tubes".

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view "wooden house" drawn to the side by side cylindrical rods connection, hence analogous art who teaches: inserting the cylinder into recesses and attaching of flat part of cylinder to flat part of cylinder used hundred of years for wooden houses assembling. It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners. An attachment means for attaching respective pairs of a plurality of corners of the tubes to each other in this claim is no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. Examiner takes official notice that this type of structural connection is notoriously well known.

On claim 6, Loftis additionally discloses: the plurality of tubes is arranged in the alternating pattern such that the placement of a four-tube array linked at the corners of the tubes creates a developed cell (C2, C4, C6,... in FIG. 1, column 3, lines 47+).

Art Unit: 3663

On claim 7, "wooden house" teaches the flat load bearing surfaces on the first one of the tubes engaging the plurality of flat bearing surfaces on the second one of the tubes (as in wooden house assembled from cylindrical rods)

A flattening of convex surface improves precision and durability of assembling.

6. Claims 8-10, 13-34, 48-51 and 53-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loftis et al., (U.S. Patent No. 6,009,136) in view of admitted prior art Bosshard (U.S. Patent No. 4,630,738, see IDS) in view of "wooden house" and further in view of Lindsay, (U.S. PAP No. 2002/0015614 A1) and a catalog of Hoover Fence Co. (Hoover).

Regarding claim 8 Loftis discloses: a container for storing or transporting spent nuclear fuel (title, abstract, column 1, lines 17+, column 2, lines 38+), the container comprising: a plurality of tubes that receive spent nuclear fuel (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+); a plurality of first rods being mounted at a point where each respective one of the tubes abuts against another one of the tubes (rod segments 5 in FIG. 1, 2, column 3, lines 47+, column 4, lines 1+), wherein each of the rods is a cylinder having a single cylindrical wall, the cylindrical wall of each of the rods contacting the recesses of both the first and second ones of the tubes.

Loftis does not necessarily teach directly the limitation "each of said first rods having an opening, wherein each respective one of the first rods is mounted in a recess of both a first one of the tubes and a second one of the tubes, at least one pin; wherein the openings of respective ones of the first rods mounted on the first one of the tubes

Art Unit: 3663

are substantially aligned with the openings of respective ones of the first rods mounted on the second one of the tubes; the at least one pin extends through the aligned ones of the openings of the first rods, thereby linking respective ones of the tubes together; and wherein each one of the respective ones of the first rods mate with a corresponding recess in the second one of the tubes when the openings of the respective ones of the first rods mounted in the recesses in the first one of the tubes are substantially aligned with the openings of the respective ones of the first rods mounted on the second one of the tubes".

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view of admitted prior art Bosshard drawn to rack for storing nuclear fuel elements, hence analogous art who teach to "It has been known lugs in the form of hinges or pivots have been welded to the edges of square tubes in order to provide lateral support between the tubes. The lugs are connected by a pin which is inserted through the lugs." (Column 1, lines 7+). It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners as disclosed in "wooden house".

Further, Lindsay discloses an example of using the tubes being substantial alignment and pins inserted into the tubes (first rods) for connection of different parts of system (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B). Example of

Art Unit: 3663

similar connection between corners of tubs is represented in catalog of Hoover Fence Co.

Motivation: The hollow rod-pin combination recited in the current claims amounts to no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. This type of structural connection is notoriously well known, for which examiner takes Official Notice. Bosshard discloses that it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (column 1, lines 7+).

On claim 9, Lindsay discloses the at least one pin is captured by one of the first rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim 10, Lindsay discloses the at least one pin comprises a head portion and a body portion, the body portion extending through the openings of the aligned ones of the first rods and the head portion resting against one of the first rods (abstract, tubes

Art Unit: 3663

42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim **14**, Loftis discloses: each of the tubes has four sidewalls and four corners defining a rectangular cross section, the plurality of recesses being formed at the corners of the tubes (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

On claim **15**, Loftis discloses: the tubes are arranged in an alternating pattern; and the tubes are linked together at the corners, wherein a sidewall of a first one of the tubes is in substantial alignment with a sidewall of a second one of the tubes (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

On claim **16**, Loftis discloses: the tubes are arranged in the alternating pattern such that the placement of a four-tube array linked at the corners of the tubes creates a developed cell (C2, C4, C6,... in FIG. 1 column 2, lines 37+, column 3, lines 48+).

On claim **17**, the notoriously well known facts in mechanical art additionally teaches: the tubes includes a plurality of flat load bearing surfaces at the corners of the tubes, the

plurality of flat load bearing surfaces on a respective one of the tubes engaging the flat bearing surfaces on a remaining one of the tubes.

It is well known from notoriously well known mechanical assembling use of plurality of flat load bearing surfaces at the convex corners of respective ones of the tubes, the flat load bearing surfaces on the first one of the tubes engaging the plurality of flat bearing surfaces on the second one of the tubes.

A flattening of convex surface improves precision and durability of assembling.

On claim 18, Loftis discloses: a container for storing spent nuclear fuel (title, abstract; column 1, lines 17+, column 2, lines 38+), the container comprising: a plurality of tubes that receive spent nuclear fuel assemblies (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+), each of the tubes having a plurality of recesses; a plurality of rods being mounted in respective ones of the recesses and each of the rods is a cylinder having a single cylindrical wall, the cylindrical wall of each of the rods contacting both the first and second ones of the recesses (rod segments 5 in FIG. 1, 2, column 3, lines 47+, column 4, lines 1+).

Loftis does not necessarily teach directly the limitation “ a plurality of first rods being mounted in respective ones of the recesses; and wherein at least one first rod mounted on a respective one of the tubes is attached to at least one of the first rods mounted on at least one second one of the tubes, thereby linking the respective one of the tubes and the at least one second one of the tubes together, wherein each of the

Art Unit: 3663

first rods is seated in both a first one of the recesses of the respective one of the tubes and a second one of the recesses of the at least one second one of the tubes” .

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view of admitted prior art Bosshard drawn to rack for storing nuclear fuel elements, hence analogous art who teach to “It has been known lugs in the form of hinges or pivots have been welded to the edges of square tubes in order to provide lateral support between the tubes. The lugs are connected by a pin which is inserted through the lugs.” (Column 1, lines 7+).

Lindsay discloses an example of using the tubes being substantial alignment and pins insertable into the tubes (first rods) for connection of different parts of system (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B). Example of similar connection between corners of tubs is represented in catalog of Hoover Fence Co.

Motivation: The hollow rod-pin combination recited in the current claims amounts to no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. This type of structural connection is notoriously well known, for which examiner takes Official Notice. Bosshard discloses that it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim 19, Lindsay additionally teaches: each of the first rods has an opening and respective pairs of the first rods are attached to each other by axially aligning the openings of the respective pairs of the first rods and extending a pin through the openings of each of the respective pairs of the first rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim 20, Lindsay additionally teaches: the pin comprises a head portion and a body portion, the body portion extending through the openings of each of the respective pairs of the first rods and the head portion abutting against one of the first rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

Art Unit: 3663

On claim 21, Lindsay additionally teaches: the pin is captured by one of the first rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim 22, Loftis teaches: each of the tubes has four sidewalls and four corners defining a rectangular cross section (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+). The notoriously well known facts in mechanical art teaches the recesses being formed along at least one of the corners of the tubes and the first rods being mounted in the plurality of recesses along the at least one of the corners of the tubes.

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim 23, Loftis teaches: the tubes are arranged in an alternating pattern and the tubes are linked together at the corners, wherein a first one of the side walls of the first one of the tubes is substantially aligned with a first one of the side walls of the second one of the tubes, and a second one of the side walls of the first one of the tubes is

Art Unit: 3663

substantially aligned with a second one of the side walls of the second one of the tubes (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

On claim **24**, Loftis teaches: at least one second rod being mounted in the recesses of respective ones of the tubes (rod 5 in FIG. 1, column 3, lines 47+), the at least one second rod mounted in the recess of a respective one of the tubes engaging the recess of a remaining one of tubes when the tubes are linked together (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

On claim **25**, Loftis teaches: the plurality of tubes comprises a first set of tubes and a second set of tubes, wherein the second rods are mounted in each one of the tubes in the second set of tubes (rod 5 in FIG. 1, column 3, lines 47+).

On claim **26**, Loftis teaches: the plurality of tubes is arranged in the alternating pattern such that the placement of a four-tube array linked at the corners of the tubes creates a developed cell (cells C2,C8,C15,... in FIG. 1, column 3, lines 47+).

On claim **27**, the notoriously well known facts in mechanical art additionally teaches: the tubes includes a plurality of flat load bearing surfaces at the corners of the tubes, the plurality of flat load bearing surfaces on a respective one of the tubes engaging the flat bearing surfaces on a remaining one of the tubes.

Examiner takes official notice that It is well known from notoriously well known

Art Unit: 3663

mechanical assembling use of plurality of flat load bearing surfaces at the convex corners of respective ones of the tubes, the flat load bearing surfaces on the first one of the tubes engaging the plurality of flat bearing surfaces on the second one of the tubes. A flattening of convex surface improves precision and durability of assembling.

On claim 28, Loftis discloses: a container for storing spent nuclear fuel (title, abstract, column 1, lines 17+, column 2, lines 38+), the container comprising: a plurality of tubes that receive spent nuclear fuel rods, each of the tubes having four sidewalls and four corners defining a rectangular cross section (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

Loftis does not necessarily teach the limitation: "each of the tubes having a plurality of recesses along at least one of the corners and a plurality of flat load bearing surfaces along at least one of the corners; a plurality of first rods being mounted in the recesses of the tubes, wherein respective pairs of the first rods are attached to each other, thereby linking the tubes together, and each of the first rods is seated in the recesses of two of the tubes, wherein each of the rods is a cylinder having a single cylindrical wall, the cylindrical wall of each of the rods contacting the recesses of two of the tubes; and wherein the tubes are linked to each other at the corners such that the flat load bearing surfaces on respective pairs of the tubes abut against each other".

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view of notoriously well known facts, that it is very difficult to produce a precise attachment of said rod to the convex

Art Unit: 3663

cylindrical surface of said corner without said cylindrical recesses. It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners. It is well known from notoriously well known mechanical assembling use of plurality of flat load bearing surfaces at the convex corners of respective ones of the tubes, the flat load bearing surfaces on the first one of the tubes engaging the plurality of flat bearing surfaces on the second one of the tubes as used for wooden house assembling from cylindrical rods.

A flattening of convex surface improves precision and durability of assembling.

This method of linking respective pairs of a plurality of corners of the tubes to each other in this claim is no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. This type of structural connection is notoriously well known.

(see catalog of Hoover Fence Co.).

On claim **29**, Lindsay additionally teaches: the first rods includes an opening, wherein the openings of respective pairs of the first rods of adjacent ones of the tubes are aligned so that a pin may be extended therethrough, thereby attaching the respective pairs of the first rods together (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Art Unit: 3663

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim **30**, Lindsay additionally teaches: the one or more pins comprise a head portion and a body portion, the body portion extending through the openings of the aligned first rods of adjacent tubes and the head portion being adjacent to one first rod of the plurality of first rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim **31**, Loftis teaches: at least one second rod (rod segment 5 in FIG. 1, column 3, lines 47+) being mounted in the recesses of a respective one of the tubes and engaging the recesses of an adjacent one of the tubes when the tubes are linked together (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

On claim **32**, Loftis teaches: a first set of the tubes and a second set of the tubes (rod segment 5 in FIG. 1, column 3, lines 47+), wherein the second rods are mounted in

Art Unit: 3663

each one of the first set of tubes (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

On claim **33**, Loftis teaches: the plurality of tubes is arranged in the alternating pattern such that the placement of a four-tube array linked at the corners of the tubes creates a developed cell (cells C2,C8,C15,... in FIG. 1, column 3, lines 47+).

On claim **34**, Lindsay additionally teaches: the pin is captured by one of the first rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim **48**, Loftis discloses: an apparatus for the storage and transport of spent nuclear fuel (title, abstract, column 1, lines 17+, column 2, lines 38+), comprising: an array of tubes (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+); a container, wherein the array of tubes are disposed in the container and the array of tubes contacts at least one side wall of the container (support bars 1, 7, in FIG. 3, column 4, lines 8+); a plurality of couplings between adjacent pairs of the tubes (Fig. 1,

Art Unit: 3663

column 3, lines 47+), wherein each of the couplings comprises: a first rod disposed on a first one of the tubes (rod segments 5 in FIG. 1, column 3, lines 47+).

Loftis does not necessarily teach the limitation: "a second rod attached to a second one of the tubes; the first rod being disposed in recesses formed in the outer surfaces of both the first and second ones of the tubes, and the second rod being disposed in the recesses formed in the outer surfaces of both the first and second ones of the tubes, wherein each of the first and second rods is a cylinder having a single cylindrical wall, the cylindrical wall of each of the first and second rods contacting the recesses formed in the outer surfaces of both the first and second ones of the tubes; the first and second rods each having an opening along a length of the first and second rods; and a pin extending through the openings of the first and second rods; and wherein a horizontal bearing load applied to the array of tubes is transferred through the tubes and the couplings to the at least one side wall of the container".

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view of admitted prior art Bosshard drawn to rack for storing nuclear fuel elements, hence analogous art who teach to "It has been known lugs in the form of hinges or pivots have been welded to the edges of square tubes in order to provide lateral support between the tubes. The lugs are connected by a pin which is inserted through the lugs." (Column 1, lines 7+).

Lindsay discloses an example of using the tubes being substantial alignment and pins insertable into the tubes (first rods) for connection of different parts of system (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2,

Art Unit: 3663

lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B). Example of similar connection between corners of tubs is represented in catalog of Hoover Fence Co.

Motivation: A plurality of couplings between adjacent pairs of the tubes recited in the current claims amounts to no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. Examiner takes official notice that this type of structural connection is notoriously well known. Bosshard discloses that it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim **49**, Loftis teaches: each of the tubes further comprises a plurality of side walls, wherein at least one of the side walls of a respective one of the tubes and a side wall of a second one of the tubes are in substantial alignment (cells C2,C8,C15,... in FIG. 1, column 3, lines 47+).

On claim **50**, Loftis teaches: each of the tubes in the adjacent pairs of tubes further comprise at least two side walls joined along a corner, and, a flat bearing surface disposed in at least a portion of the corner, wherein for each of the adjacent pairs of tubes, a first one of the flat bearing surfaces contacts a second one of the flat bearing

Art Unit: 3663

surfaces (cells C2,C8,C15,... in FIG. 1, column 3, lines 47+).

On claim **51**, Loftis teaches: at least one solid rod disposed between the adjacent pairs of the tubes (rod segment 5 in FIG. M1, 2 , column 3 lines 47+).

On claim **54**, the notoriously well known facts in mechanical art additionally teaches: the recesses are formed in a plurality of corners in the outer surfaces of the tubes. It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners

On claim **55**, Lindsay additionally teaches: the pin extending through the openings of the first and second rods is rigidly attached to at least one of the first and second rods (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

Art Unit: 3663

On claim **56**, Lindsay additionally teaches: the pin is rigidly attached to at least one of the first and second rods by a weld, wherein the weld is positioned so as not to be subject to the horizontal bearing load (abstract, tubes 42, pins 44 in FIGs. 2A, 2B, 3A, 3B, 3C, 3D, 4A, 4B, page 2, column 2, lines 38+, page 3, column 1, lines 1+, pin 70 in FIGs. 7A, 7B).

Motivation for said inclusion derives from Bosshard: it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7+).

On claim **57**, Loftis additionally teaches: a cross sectional shape of the tubes is selected from the group consisting of a square, a rectangle (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

(Groups: a circle, a triangle, a hexagon, a heptagon, and an octagon are not elected).

On claim **58**, Loftis teaches: the array of tubes forms a cell, wherein the tubes are arranged in an alternating pattern in the cell (C1-C15 in FIG. 1, 3, column 2, lines 37+, column 3, lines 48+).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vadim Dudnikov whose telephone number is 571- 270-1325. The examiner can normally be reached on 8:00 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached, Mon-Fri 7:00am-4:00 pm, at telephone number 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patent Examiner.

Vadim Dudnikov

August 13, 2007.

Primary Patent Examiner:



Johannes Mondt

(TC 3600, AU 3663)